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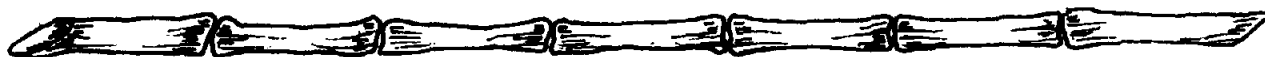
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FRIENDLY CASUALTIES FROM FRIENDLY FIRES (U)

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VIETNAM



LESSONS LEARNED NO. 70

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HEADQUARTERS
UNITED STATES MILITARY ASSISTANCE COMMAND, VIETNAM
APO 96222

MACJ343

17 October 1968

SUBJECT: Vietnam Lessons Learned No. 70: Friendly Casualties from
Friendly Fires


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VIETNAM LESSONS LEARNED NO. 70

FRIENDLY CASUALTIES FROM FRIENDLY FIRES

1. INTRODUCTION:

a. Fatalities inflicted by friendly fires on friendly forces are as old as warfare itself. Stonewall Jackson, one of the most brilliant general officers the Confederacy produced, was mortally wounded at Chancellorsville by the fire of his own men. As technology increases the complexity of modern warfare, such mistakes are apt to occur more frequently. This is true especially in an environment like Vietnam where there are no "front lines" and firepower is continually massed in support of ground operations.

b. Early in 1964, the increased rate of accidental casualties became a matter of grave concern to COMUSMACV who stated, "...one mishap, one innocent civilian killed, one civilian wounded or one dwelling needlessly destroyed is one too many." Commanders were directed to maintain a personal interest in these accidents as they occurred and take appropriate corrective action to drastically reduce or eliminate such occurrences. This was to be accomplished by constantly reviewing and updating training programs and safety directives, and strictly enforcing approved operational procedures and rules of engagement. The goal was to eliminate, to the maximum extent possible, friendly casualties due to human errors.

c. To ensure continuing command attention and emphasis on this subject, a quarterly analysis of friendly casualties caused by friendly fires has been initiated. Subsequent to this analysis, data is disseminated to subordinate commanders for information and necessary corrective action to minimize casualties inflicted on friendly forces and civilians.

2. TRENDS:

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a. In the first and second quarters of Calendar Year 67, fire direction center errors and firing battery errors were the most prevalent, with a total of 56 incidents. Faulty ammunition created 30 incidents; lack of coordination accounted for 24 incidents; unit disorientation was responsible for 20 incidents; forward observer and forward air controller errors caused 16 incidents; and violations of rules of engagement, particularly delivering ordnance into villages without the sector chief's approval, accounted for 13 incidents. Fixed wing aircraft delivered ordnance incidents, although infrequent, had devastating effects when they occurred. Numerous miscellaneous incidents occurred after all prescribed rules of engagement and established standard operating procedures had been followed. These primarily involved civilians returning to hostile zones which had been cleared for harassing and interdiction fires or civilians violating curfew laws.

b. In the third quarter of Calendar Year 67, a rising trend was noted in the number of incidents and friendly deaths. This represented an increase of 24 percent in the number of incidents and an increase of 71 percent in the number of friendly deaths over the second quarter of that calendar year. Artillery fires and air delivered munitions accounted for 63 percent of the incidents, 83 percent of the deaths, and 70 percent of the wounded. Remaining casualties were by mortar fires, small arms, naval gunfire, water surface craft, and miscellaneous incidents. Although all of the reports of investigation were not available, those analyzed revealed that the most prevalent causes of incidents were human errors by Forward Observers (FO), Fire Direction Center (FDC) personnel, and gun/howitzer and mortar crews. During this quarter, coordination problems resulted in 35 incidents; faulty ammunition caused 27 incidents; disorientation was responsible for 20 incidents; and pilot/Forward Air Controller (FAC) error caused 11 incidents. The principle cause of most incidents was failure to follow established procedures, directives, and safety checks. Incidents also continued to occur when civilians violated curfews, entered fire areas, or inadvertently became involved in fire fights.

c. In the fourth quarter of Calendar Year 67, the upward trend of total incidents was reversed. The number of incidents was down 30 percent, deaths down 28 percent, and casualties were down slightly but remained at a high level. The preponderant cause of incidents was the result of supporting fires being too close to friendly positions. The enemy's tactic of "hugging" the friendly positions complicated the task of delivering supporting fires without a margin of risk in inflicting friendly casualties. Although in the minority during this quarter, many incidents continued to occur as a result

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of human error.

d. The country-wide trend for the first quarter of Calendar Year 68, as compared with the quarterly averages for Calendar Year 67, showed a decrease in incidents by approximately 51 percent, a decrease in deaths by approximately 17 percent, and a decrease in wounds by approximately 33 percent. One accidental air strike accounted for 25 percent of the total number of deaths for this quarter. In view of the increased number of operations for this quarter, friendly casualties caused by friendly fires showed a significant improvement.

e. The downward trend in casualties continued during the second quarter of Calendar Year 68. A comparison of the second quarter results with the first quarter, Calendar Year 68, showed a reduction in incidents by 18 percent, deaths by 55 percent, and wounded by 18 percent. As in the first quarter of Calendar Year 68, artillery and fixed wing air incidents continued to cause the majority of the casualties. During this same quarter, as a result of the 5 May 1968 VC/NVA offensive against Saigon, 127 civilians were killed and 2950 wounded by enemy/friendly actions. This resulted in a study being made to determine those measures that must be taken by friendly forces to reduce noncombatant casualties and destruction of civilian property. Corrective action has been initiated.

3. INCIDENTS AND CAUSATIVE FACTORS: The causative factors involved in incidents of inaccurate or accidental delivery of ordnance, resulting in the injury or death of friendly military forces or non-combatants, are myriad. This Lessons Learned could not detail the multiplicities of causes in each and every such incident that has occurred throughout the Republic of Vietnam. However, representative ground (Appendix 1) and air (Appendix 2) incidents have been selected and are discussed from the point of view of (1) what caused the incident and (2) the lessons learned. Causative factors are summarized in Appendix 3.

4. SUMMARY:

a. The statistics and examples of incidents, although important, cannot and do not of themselves reveal the complete picture of the deplorable loss of life by fire from friendly sources. All service components are acutely aware of the seriousness of these incidents in terms of lowered effectiveness of the fighting forces, lessened rapport between US forces themselves and Vietnamese Nationals, and the unquestionable adverse effect on the overall military effort.

b. The lessons learned suggested in Appendices 1 and 2 are not new. They are merely a restatement of lessons which have previously

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been publicized in various forms and in great detail by commanders at all levels. They also serve as a reminder that the battlefield is and always has been a strict and harsh disciplinarian. Those who have deviated from proven techniques, used "short cuts" because it was the "easy way out" or failed to follow directives and established procedures, have done so with disastrous results. While adherence to proven techniques and established procedures does not completely eliminate the possibility of error, it certainly reduces the probability. Therefore, it is incumbent upon commanders at all echelons to constantly press, with every means available, for a solution to the vexing problem of "friendly casualties from friendly fires."

5 Appendices

1. Ground Incidents
2. Air Incidents
3. Summary of Causative Factors
4. Weapons Minimum Safe Distances
5. Source Material

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GROUND INCIDENTS

1. INCIDENT:

a. This incident occurred while a US infantry company was establishing a night defensive perimeter. In firing their planned defensive fires, the initial 81mm mortar round fell short, 35 meters from the tube, wounding three US soldiers (one later died of wounds). The platoon sergeant, located in an adjacent gun pit, saw the round flutter and drop. He immediately yelled, "Short round", but the enlisted man who died of wounds started running rather than taking cover.

b. Following this incident and after troops were cleared from the immediate area, an additional round was fired using the same data and ammunition lot number. This second round functioned normally and landed in the planned impact area.

c. The cause of this incident was attributed to ammunition malfunction and not human error on the part of the gun crew.

d. Lessons Learned:

- (1) Personnel must take cover when notified of a "short round."
- (2) Prompt action must be taken to suspend and report any suspected lots of faulty ammunition.

2. INCIDENT:

a. A US infantry platoon conducted a mounted combat patrol and established an ambush position in the vicinity of a district headquarters compound. During the evening, US troops engaged an enemy force. A Light Fire Team (LFT) was requested and within a few minutes arrived on station. The sub-sector advisor directed the LFT commander to engage the wood line north and west of the compound. On the first firing pass, the LFT's fires impacted in the vicinity of the friendly troops. The battalion commander requested that fire be shifted to the west. The LFT was informed but almost immediately the battalion commander reported that the gunships had again fired on the US troops. The advisor gave a cease fire and released the LFT. This incident resulted in the death of one US soldier and injury to nine others.

b. The primary cause of this incident was the employment of a

LFT too close to friendly troops at night without clearance from or communications with the ground commander. The primary factor contributing to the incident was a misunderstanding between the sub-sector advisor and the LFT as to the exact location of friendly troops. The advisor failed to give specific coordinates of friendly troop dispositions and US military units in the immediate area were not monitoring the advisor's net which controlled the LFT.

c. Lessons Learned:

(1) Friendly troop dispositions must be given to the supporting LFT by coordinates and in the clear if necessary.

(2) If doubt exists as to the location of friendly units, the LFT must request marking or identification of friendly positions.

(3) Prior to a night engagement by an LFT of a suspected VC position, the enemy force locations must be verified with the ground commander concerned.

(4) Friendly units operating in the immediate area of contact must monitor the net controlling the LFT.

(5) Equipment for night marking of positions is required for all units.

3. INCIDENT:

a. This incident occurred when a Forward Observer (FO) with an infantry company requested a 100 meter shift away from a previously fired Defensive Concentration (DEFCON). The DEFCON had been fired during darkness, in thick growth, and apparently was much closer to the battalion's perimeter than estimated. The observer's target description misrepresented the criticality of the situation and caused the Fire Direction Center (FDC) to fire the DEFCON as a contact mission not requiring safe fire adjustment of the battery. This action resulted in the death of three US soldiers and injury to nineteen others.

b. Causes of this incident were a misrepresentation of the nature of the target in a fire mission and failure to comply with established policies for the conduct of non-contact missions close to friendly perimeters.

c. Lessons Learned:

(1) Defensive concentrations should not be adjusted closer than

300 meters to friendly perimeters unless expressly requested by the unit commander.

(2) Unit commanders must include FOs and Liaison Officers (LOs) in supported unit fire planning to the greatest possible extent.

(3) The fire request must accurately describe the target and tactical situation of the supported unit.

4. INCIDENT:

a. This incident occurred when a 105mm artillery battery fired an unobserved "trail runner" mission. When fired, due to a misunderstanding on area clearance, six rounds impacted in the proximity of friendly personnel resulting in the injury of one ARVN soldier and three Vietnamese civilians. The mission was passed from one artillery battalion to another due to a boundary change in two brigade Areas of Operations (AOs). When questioned, the original firing battalion Fire Direction Officer (FDO) indicated that the areas to be fired were cleared. The FDO of the receiving battery then assumed that all required area clearances had been obtained but in reality targets had been cleared only within the AO of the old firing battalion. All gunnery data and procedures were found to be correct.

b. This incident was caused by the failure to clarify exactly what clearance had been obtained and the statement that the areas were cleared should have been amplified as had been the practice on previous occasions to indicate what clearances had been granted.

c. Lessons Learned:

(1) FDOs must be alert to the possibility of misunderstanding on clearances, especially for areas which must be cleared by Vietnamese agencies.

(2) Units passing areas to other units for firing must be specific in stating what clearances have been obtained.

(3) Regardless of the source of targets, FDOs, in whose AO the target falls, are responsible for obtaining all clearances necessary. If any doubt exists, clearances must be reverified prior to firing.

5. INCIDENT:

a. One tube of a 4.2 inch mortar platoon fired with a 200 mil discrepancy in deflection while firing a registering round in support of the defense of a battalion perimeter. One round impacted in

a company sector and four US soldiers were killed and ten wounded.

b. The cause of this incident was determined to be a failure on the part of the gunner to refer his sight as directed and was compounded by the failure of the squad leader to make the required safety checks.

c. Lessons Learned:

(1) Mortar platoons must be constantly trained and tested to ensure their proficiency.

(2) Established procedures must be rigidly adhered to by each crew member during all firing missions.

6. INCIDENT:

a. This incident occurred while a US squad was conducting patrol activities in the vicinity of a fire support base. The squad leader saw a Viet Cong with a weapon and decided to call for artillery support. He sent his fire command to the artillery reconnaissance sergeant on the company internal radio net. The reconnaissance sergeant determined that the range to the target was 350 meters, verified this with the observer and inserted "Danger Close, 250 meters" into the fire request. This was transmitted to the artillery liaison section in the infantry battalion Tactical Operations Center (TOC), cleared, sent to the supporting artillery battalion and further assigned to a firing battery who processed the fire command and a smoke round was fired. This round was spotted in a rice paddy about 300 meters to the right flank of the observer, who then adjusted with "Left 150, Repeat Smoke." This second round impacted again to the right flank of the observer who then erroneously repeated "Left 150." The reconnaissance sergeant, monitoring the mission, asked the observer if he desired Shell, HE, Fuze Quick. The observer replied that he did and was warned to get his troops down because of the close proximity of the adjustments. The round was fired and impacted in the vicinity of the squad, injuring three personnel.

b. The squad leader became disoriented during the adjustment of the mission. He unconsciously faced the second round as it impacted, estimated the distance to the target as being 150 meters, and gave a correction of "Left 150" instead of "Add 150." The FDC had no way of knowing that the observer had changed his Observer - Target (OT) azimuth by 1600 mils and accepted the "Left 150" as the desired shift.

c. The cause of this incident was the incorrect adjustment of artillery fire by an inexperienced observer.

d. Lessons Learned:

(1) All individuals who may be required to adjust artillery fire must be thoroughly oriented in forward observer procedures with frequent practice sessions to ensure proficiency.

(2) Unseasoned observers should not be permitted to adjust artillery fire any closer than 600 meters to friendly elements unless the tactical situation is extremely critical.

(3) OT azimuth errors can be precluded by inexperienced observers through the use of cardinal directions for subsequent corrections; i.e. East 100, North 150, Repeat Smoke.

7. INCIDENT:

a. This firing incident resulted from a change of coordinates during clearance for fire procedures between the operations center of an artillery battalion and the TOC of the infantry division artillery. In the telephonic transmission of the fire request, the grid coordinates were transposed from XT6324 to XT6423. This error resulted in one killed for the requesting infantry unit.

b. The cause of this incident can be attributed to a lack of double check procedures on fire requests by each element in the clearance chain.

c. Lessons Learned:

(1) Confirmations of coordinates must be accomplished by each element in the clearance chain prior to granting approval to fire.

(2) The firing unit and the ground unit LO must coordinate to ensure that the area of impact is still clear and that no error in coordinates is made during clearance of the mission.

8. INCIDENT:

a. The LO with an infantry battalion called the FDC of the supporting artillery battalion and gave target coordinates for an adjust fire mission and indicated a platoon or larger size enemy force. The mission was passed to a firing battery and was followed by the artillery battalion FDC. After adjustment had been completed, the LO called for fire for effect on the same target. Since the battery had only four guns available at the time, it was directed to fire a battery six rounds. Due to a breechlock malfunction, the number four howitzer was called out of action and the number five howitzer was

directed to fire three additional rounds in order to complete the fire mission. Shortly thereafter the LO with the infantry unit notified the artillery battalion FDC that several rounds had landed in the vicinity of the unit's perimeter and that one gun appeared to be firing out of lay. This incident resulted in two US soldiers being wounded.

b. The cause of this incident was attributed to a 100 mil deflection error by a howitzer section of the firing battery.

c. Lessons Learned:

(1) The firing battery officers and noncommissioned officers must follow prescribed detailed procedures for checking laying data and for controlling the firing of all sections.

(2) The firing battery must perform fire missions exactly as given by the FDC. Checks must be established to ensure that there are no deviations.

(3) All information must be accurately recorded, properly maintained and checked to prevent possible firing errors.

9. INCIDENT:

a. A battery of US artillery fired fifteen 105mm rounds which detonated near a bridge being secured by US and Vietnamese Popular Force (PF) soldiers. This fire mission resulted in the wounding of one US and one PF soldier.

b. The fire mission was called in by a PF soldier and relayed through the district chief and the US liaison representative at district headquarters. US target clearance was obtained from the appropriate US artillery battalion liaison officer who was unaware that a US armored personnel carrier was positioned at the bridge. The target was misplotted 1000 meters by the ARVN district chief and the observer-target direction was also incorrectly given as 3200 mils instead of 320 degrees.

c. The first round in adjustment was fired and the correction given was "Drop 300." The second round was fired and a correction of "Right 300, Fire for effect" was requested. At this time the firing battery FDO informed the Vietnamese that the "fire for effect" plot was within 200 meters of the bridge. The Vietnamese confirmed the request and the FDO then requested that personnel at the bridge be warned to take cover. A battery of three rounds was fired which resulted in the two casualties.

d. The cause of this incident was the error in the determination of the target. The PF at the bridge either disregarded or did not receive the warning of the close proximity of the fire for effect rounds. As a result, the US personnel were not aware of the danger although they had observed the round adjustments prior to the fire for effect.

e. Lessons Learned:

(1) The importance of current and accurate location reports of all maneuver elements must continually be emphasized to supported units.

(2) US personnel should adjust US artillery whenever the tactical situation permits. This eliminates the problem of a language barrier and allows the FDO to better evaluate the progress of the mission and the competence of the observer.

10. INCIDENT:

a. A FO with a US infantry company was firing a destruction mission with one gun of the supporting artillery battalion on a well fortified B-40 rocket position 30 to 40 meters north of the company location. Adjustment was difficult due to terrain and proximity of the enemy rocket position to friendly forces. The FO had to adjust by sound and could only observe those rounds which became air bursts after hitting trees. The FO's last correction, as sensed from the previous round, was correctly computed by the FDC, checked by the section chief and fired. Because of the uneven terrain and the probable error of the range fired (9,920 meters), the round impacted outside the company perimeter, resulting in the death of one and the injury to a second member of the infantry unit.

b. The two personnel involved in this incident were outside the unit perimeter. This was a direct violation of the unit commander's order that all personnel would stay under overhead cover until the fire mission was completed.

c. Cause of this incident was a violation of orders to remain under protective overhead cover while artillery was being used for close-in support. A contributing factor was the proximity of friendly troops to the target.

d. Lessons Learned.

(1) The effectiveness of orders issued is dependent upon command supervision at all echelons.

(2) Protective cover must, if available, be utilized by all personnel during close-in fire support missions.

11. INCIDENT:

a. During a contact mission, one round of 175mm impacted on a friendly position resulting in several casualties.

b. The cause of this incident was that a newly assigned member of the firing section selected different lots of powder during the mission.

c. Lessons Learned:

(1) The same powder lot must be used throughout the mission. Powder must be segregated by lots, and powder lots that are not fired during registration must not be used for other than adjust fire missions.

(2) Detailed instructions and training must be given to newly assigned personnel.

12. INCIDENT:

a. Friendly casualties were caused when an unknown number of 105mm rounds impacted on their position during a contact mission.

b. Cause of this incident was that the mission was started by a ground FO, however, he was unable to observe the rounds. The mission was then taken over by an airborne observer who made shifts along the gun-target (GT) line, while the FDC was plotting the shift along the OT line.

c. Lessons Learned:

(1) When the observer changes, a new OT azimuth must be given.

(2) The FDO must constantly check firing data in order to preclude firing errors.

13. INCIDENT:

a. One round of 155mm impacted on friendly troops during a contact mission.

b. The cause of this incident was FO error. An airborne artillery liaison officer, in a command and control helicopter, attempted

to adjust fires of four batteries at one time. During the confusion he gave a correction which caused the round to fall left and short of the target.

c. Lessons Learned:

(1) Each member of the artillery team must know his own capabilities and limitations and not over extend himself.

(2) Continuous emphasis must be placed on proper FO procedures.

14. INCIDENT:

a. Friendly casualties were sustained during a contact mission when rounds impacted in a hamlet.

b. The cause of this incident was that both the FO and the company commander had misplotted their location. The rounds were adjusted by sound and neither the FO nor the company commander could see the hamlet in which the rounds impacted.

c. Lessons Learned:

(1) All friendly locations and no-fire zones should be plotted by the FDC on the firing chart or map.

(2) The creeping method of artillery adjustment should have been used to place rounds on the target.

(3) FO training programs must be conducted concurrently with tactical operations.

AIR INCIDENTS

1. INCIDENT:

a. The number two aircraft of a flight of two F100s, under the control of a US Forward Air Controller (FAC), delivered Cluster Bomb Units (CBU) approximately 1000 meters southeast of the FAC marked target. As a result, two US soldiers were wounded.

b. Investigation revealed that the pilot of the number two aircraft, while reversing direction of flight after the first pass, momentarily lost sight of the target. Upon completing the turn, he lined up on smoke previously laid down by a helicopter. Thinking that this was the same target, he delivered his ordnance. The target area and impact area were similar but fairly well separated.

c. Lessons Learned:

(1) Pilots must keep the target in sight at all times.

(2) The importance of the FAC briefing the strike aircraft pilots on the position of the nearest friendly forces cannot be overly emphasized.

2. INCIDENT:

a. The number three man of a Vietnamese flight of three F5 aircraft delivered two BLU-1B Fire (Napalm) bombs on an element of a US infantry division engaged in combat with Viet Cong forces in Binh Dong Province resulting in two US killed and 18 US wounded. The wounded were serious enough to warrant evacuation out of country.

b. The cause of this incident was threefold.

(1) Although the FAC and the VNAF flight leader understood each other, the pilot of the number three aircraft did not. This was not apparent to the FAC at the time of the incident since the VNAF flight leader spoke fluent English.

(2) The number three pilot did not know the exact location of the friendly ground troops.

(3) Smoke and haze in the target area partially obscured the enemy target as marked by the FAC and the smoke marking the friendly troops position looked similar to that marking the target.

c. Lessons Learned:

(1) Air Liaison Officers (ALOs) and FACs involved in control of VNAF strike aircraft during the conduct of close air support operations must recognize that a communications problem may exist between USAF and VNAF aircrews.

(2) FACs must take all possible measures to ensure that positive understanding exists between the FAC and VNAF strike pilots before attacking targets.

3. INCIDENT:

a. This incident occurred in the Klamath Falls area of operation. Two B57 aircraft were returning from a Combat Skyspot mission when they were diverted to support a Vietnamese Civilian Irregular Defense Group (CIDG) company in contact with an enemy force. The strike was being controlled by an airborne FAC. Friendly ground forces marked their position with green smoke. This was considered necessary because heavy jungle vegetation prevented visual sighting of friendly troop locations from the air. Prior to the attack by the B57s, several changes as to target position and attack headings were made between the ground commander, the FAC and the strike aircraft. After several changes, one of the strike aircraft strafed the suspected target area with 20mm cannon. During the strike, the rounds impacted on the friendly positions resulting in 4 CIDG killed, 28 CIDG wounded and 2 US advisors wounded. The second aircraft did not make a strafing pass.

b. Contributing factors to this incident were:

(1) The heavy vegetation precluded positive identification of the target.

(2) The close proximity between friendly troops and target (100 meters) in an area which was not clearly discernable except by smoke.

(3) Too many changes concerning target position and attack headings were given the pilot prior to the strafe pass.

(4) The pilot did not confirm the target with the FAC prior to engagement.

c. Lessons Learned:

(1) Ordnance must not be expended upon positions in close proximity to friendly positions unless the strike pilot can positively

identify the target.

(2) In situations where friendly troops are in close proximity to a target, it is imperative that the target be clearly marked and acknowledged.

4. INCIDENT:

a. This incident occurred when two F100s were scrambled to support an element of a US division. After minor difficulty in establishing visual contact between the FAC and the strike pilots, preliminary prestrike coordination between the FAC and the pilots was accomplished, and the target marked. Friendly positions were identified and the strike began. After the fourth pass, an unidentified aircraft was sighted, so the two aircraft terminated the bombing passes to make positive identification of the aircraft. When the aircraft returned to the target area, the FAC marked another target for strafing and warned the two aircraft that he was moving them closer to the friendly troops. Two strafing passes were made by both aircraft. While on the strafing run, one of the pilots observed a trail which he requested to strafe. On his second pass, clearance to strafe the trail was obtained from the FAC. In the attack that followed, five friendly troops were wounded.

b. This incident reflects the need for stressing proper target identification and marking by the FAC. The strike pilots must be apprised of the precise location of friendly troops at all times; any errors in distance or azimuth can be disastrous. It is apparent that the friendly position as originally given by the FAC to the strike pilots was inaccurate and only general terms were used to brief the strike pilots on target and friendly positions. The trail strafed by the pilot was not the same trail envisioned by the FAC. The FAC should have given specific instructions as to trail location in meters from a specific known point. He should have briefed the trail orientation (north to south). Also, it was noted that the trail the strike pilot saw while at the low altitude was not distinguishable at pattern altitude.

c. The cause of this incident lies in the fact that the lead strike aircraft strafed a trail leading out from a friendly position which had not been identified by the FAC. Factors contributing to the incident were:

(1) Miscalculation of ground distance by a relatively inexperienced FAC and relayed to strike pilots. As consequence, the pilots believed that friendly forces were well clear of the target area.

(2) Heavy jungle growth obscured the small trail evident to the strike pilot at low level but not evident after he had ascended to pattern altitude for the strike pass. As a result, the pilot made a mistake and strafed the wrong trail only a short distance from his first pass which was on target.

d. Lessons Learned:

(1) Pilots must be briefed on the distance and direction of friendly forces from the target area.

(2) The FAC must provide the strike pilots with a complete description of the ground situation in specific terms rather than generalities.

(3) The FAC must receive acknowledgement from the strike pilots of instructions given prior to clearing aircraft for strike.

(4) Low level, over-the-target recognition does not always present the same picture as that viewed from higher altitude or positions further from the target area.

5. INCIDENT:

a. A flight of two F4Cs was scrambled to support friendly troops in contact with the enemy in the vicinity of Ban Me Thuot. Ordnance load for the lead aircraft was six MK-82 High Drag General Purpose bombs. The wing aircraft carried four unfinned napalm bombs and two CBU's. The fighters rendezvoused with a FAC and began their strike. A series of seven attack passes were made, four by the lead aircraft and three by the wing man, the last of which was dry. As the wing man was about to begin his fourth pass, the FAC held the fighters "high and dry," as a napalm bomb was observed to have landed near a church. A recapitulation of events revealed the napalm tank inadvertently dropped as the wing man was turning to the attack on his third pass. This incident resulted in 13 civilians killed and six wounded.

b. Post flight inspection of the aircraft was considered routine. No discrepancies were recorded pertaining to the inadvertent release of the napalm bomb, consequently, no maintenance check was performed. On a subsequent mission, two sorties after the inadvertent release of napalm, another malfunction developed. A hung bomb malfunction occurred on the same bomb rack. Maintenance investigation revealed a bent and cracked bomb rack and slow cartridge burn.

c. The primary cause of this incident was the malfunction of the

bomb rack mechanism.

d. Lessons Learned:

(1) That greater and continuous emphasis be given to weapons systems quality control.

(2) That unsatisfactory ordnance system operation be promptly reported for corrective action.

(3) That maintenance and armament crew daily inspection and equipment check-outs be thorough and complete.

6. INCIDENT:

a. This incident occurred south of Hue. Resultant casualties were four USMC personnel killed and two wounded.

b. Two companies of US Marines were in heavy contact with NVA forces. Both companies were taking casualties from small arms, automatic weapons, 60mm mortar fire and were having difficulty advancing against the enemy position. Air strikes were requested and provided by two Marine A1s. The air strike was controlled by a USAF FAC. The ground commander requested that the strikes be moved closer to his troops. He was aware of the close proximity of friendly troops to the target, but decided that the situation warranted such action. The aircraft made three passes with all weapons on target. On the fourth pass, bombs also hit the target area, but fragments were thrown into friendly lines and caused the casualties.

b. The primary cause of this incident was air delivered ordnance being dropped too close to friendly troops. Further, the tree cover in the target area precluded visual observation of the friendly troops from the air.

c. Lessons Learned:

(1) FACs must be fully informed by ground commanders as to the exact locations of all friendly elements.

(2) Ground commanders must know and consider the dispersion effects of all types of air delivered ordnance.

7. INCIDENT:

a. This incident occurred as the result of an immediate air strike by two F100s in support of two companies of a US infantry division in

close and heavy contact with the enemy. The air strike was controlled by a USAF FAC. Each F100 delivered four bombs about 250 meters northeast of burning napalm (dropped by a previous strike) which was being used for identification and orientation of the target area. The ground situation became intense, with enemy snipers firing at friendly troops from a distance of 30 feet. At this point, the ground commander requested that strafing passes be made along the western edge of the burning napalm. The F100s made two strafing passes each approximately 65 meters from friendly positions. On the last pass, the rounds of one of the aircraft hit the friendly perimeter resulting in two killed and seven wounded.

b. This incident apparently resulted from two factors: approaching darkness (last light conditions) and pilot's disorientation with reference to his attack heading on the last strafing pass. Both pilots received the FAC's instructions, one pilot strafed the target successfully, the other strafed the friendly troops. It appears that the pilot who strafed the friendly troops either failed to understand the instructions, or became disoriented and fired short of the target area.

c. Lessons Learned:

(1) FACs must require strike pilots to confirm run-in headings in cases where heading variation would result in overflight of friendly positions.

(2) When a "troop in contact" situation exists, especially under diminishing light conditions, every effort must be made by aircrews to determine the exact friendly location and situation prior to delivery of ordnance.

(3) A requirement exists for the development of a standard terminology for strike pilot/FAC air-to-air communications in order to eliminate misunderstanding of instructions.

8. INCIDENT:

a. This incident occurred during the conduct of a preplanned strike on an NVA headquarters location in support of a US infantry division. The flight consisted of two F100s armed with MK-82 High Drag General Purpose bombs. The lead pilot had completed three passes, expending all four bombs on target. The second pilot had expended two bombs on target when, on his third pass, the bomb fell short (1200 - 1300 meters) killing one US soldier and wounding four others. Attack headings were generally north to south passing 200 meters west

of friendly troops on the run-in.

b. The main friendly element position was marked with smoke; however, the forward element (southernmost and closest to the target) was not marked with smoke for fear of giving away the position to the enemy. The FAC observed the colored smoke marking the main element and was verbally given the location of the forward element. The fighters were unable to see the colored smoke of the main element and it is doubtful whether they would have been able to see the smoke had the forward element been marked.

c. The primary cause of this incident was accidentally thumbing the bomb release button on the stick grip while attempting to trim the aircraft with the stick trimmer button. Contributing factors were:

(1) The pilot did not maintain a precise attack heading and therefore overflew the friendly forces.

(2) The closest friendly elements were unable to mark their positions with smoke.

(3) The low experience level of the pilot.

d. Lessons Learned:

(1) A requirement exists for providing ground units with an effective means of position marking in heavy dense jungle, especially in two or three canopied jungle areas.

(2) Command and control helicopters can effectively mark those friendly positions nearest the fighter's flight pass, enemy situation and weather conditions permitting.

(3) The FAC and fighter aircraft patterns should not be over friendly troops.

9. INCIDENT:

a. This incident occurred when two F100 tactical fighters were scrambled to strike a suspected Viet Cong target in support of a brigade of a US division. The area of operations was heavily fortified and the brigade was seeking to employ only high explosive ordnance. When it became apparent that the brigade would be receiving aircraft with mixed ordnance loads, it was decided to select a dump grid for the CBU. Since the fighters could not deliver the CBU on target they were diverted to the dump grid target. Upon arrival, the FAC observed Army gunships striking a target about 2000 meters north of the target

coordinates. The FAC had previously confirmed with the brigade Tactical Air Control Party (TACP) that no friendly troops were in the target area. He assumed the target coordinates were in error and that his target was the same the gunships were firing upon. He then obtained from an Army gunship in the area, what he assumed to be clearance for delivery on the new target and cleared the strike flight. Two CBU-2A units were dispensed on the marked target by one of the strike fighters. Twenty-three casualties (wounded) were sustained by a friendly unit in the area. The brigade TACP had not been informed that troops had been air assaulted into the area that morning.

b. The primary cause of this incident was the changing of the CBU dump area, by the FAC, without obtaining clearance from the TACP.

c. Lessons Learned:

(1) FACs must ascertain from all sources the location of friendly forces prior to granting clearance to strike a target.

(2) Brigade TACPs must keep abreast of the movement of friendly forces in their area of operations.

(3) Brigade TACPs must keep their FACs informed of all friendly positions in the target area of operations.

(4) Friendly units must mark their positions if requested or whenever air units are maneuvering overhead with any indication that a strike is imminent.

10. INCIDENT:

a. A F4D under FAC control dropped an M-117 Low Drag bomb within the perimeter of an element of a US Army brigade. The friendly forces were in close heavy contact with an unknown size enemy force. The bomb impacted approximately 225 meters east of the briefed target area resulting in three missing in action and twelve wounded.

b. The airborne FAC had fired a white phosphorus (WP) rocket to mark the target but it landed 75 meters to the west. The friendly position was not marked by smoke. Although the FAC was certain of the friendly troops location, it is obvious that the F4D pilot had misinterpreted the FAC's description. Since the target was located 75 meters east of the rocket and the friendly forces were also located to the east of the target (approximately 225 meters), the strike aircraft were required to estimate the distance and drop between the WP mark and the friendly position. As stated in 7th Air Force Conventional Airmunitions Guide (See Appendix 4), the minimum safe distance

for M-117 Low Drag bombs is 193 meters for protected troops in armored vehicles, fox holes, bunkers or trenches. Since friendly forces were an estimated 225 meters from the target, this left only a 32 meter margin for error.

c. The primary cause of this incident was lack of judgment in determining distances. Contributing factors were the use of M-117 bombs in such a close tactical situation. If the marking rocket had been on target or between the target and friendly positions, an error in distance estimation by the strike pilot would probably have been of no consequence. The FAC failed to request that the friendly units mark their position by smoke.

d. Lessons Learned:

(1) Friendly forces must mark their positions, if possible, for each set of strike aircraft.

(2) Strike aircraft should not deliver initial ordnance between the FAC's mark and the ground force position without requiring the FAC to re-mark the target or to mark between the target and the friendly forces.

(3) A reference distance should be established by FACs and this reference be used as the means for judging the estimated distances during air strikes.

SUMMARY OF CAUSATIVE FACTORS

GROUND

1. Fire Direction Center:

- a. Computation errors by FDO.
- b. Deflection errors due to inadequate supervision and lack of adherence to double check procedures.
- c. Failure to reorient range deflection protractor upon change in azimuth of fire.
- d. Current meteorological message not applied to firing data.
- e. Failure to follow established SOPs.
- f. Failure to maintain up-to-date unit locations.
- g. Erroneous azimuths as a result of poor plotting.
- h. Transposing numerals in coordinates.
- i. FDO failed to plot canister point of impact.
- j. FDO failed to secure proper grid clearance.
- k. Lack of completeness of computer's records.
- l. Poor judgment on the part of the FDO.
- m. Maps and charts not up-to-date in the FDC.

2. Firing Battery:

- a. Incorrect powder charge.
- b. 100 Mil quadrant error (QE).
- c. 200 Mil error in battery lay.

- d. Failure to establish minimum QE.
- e. Deflection errors.
- f. Ammunition container thrown in path of round.
- g. Errors in boresight and lay.
- h. Failure to adhere to established check systems.
- i. Incomplete records.
- j. General lack of adequate supervision by supervisory personnel from, in some cases, the Battery Commander down to the Chief of Section.
- k. Chief of Section acting as a working section member and not adequately performing his principle duty of overall supervision.

3. Forward Observer:

- a. Incorrect OT azimuth.
- b. FO did not know locations of friendly forces.
- c. Failure to change OT azimuth with change in location.
- d. Fires adjusted too close to friendly forces.
- e. Map outdated.
- f. FO misread map by 1000 meters.
- g. Error in position location and azimuth to target.
- h. FO (Sgt) not familiar with compass.
- i. Target incorrectly located.
- j. Deviation from sound FO procedures.
- k. Disorientation.
- l. FO did not require readback.
- m. Lack of coordination between FOs.
- n. FO adjusted close-in with limited visibility.

- o. FO not familiar with new terms.
- p. FO repeatedly switched back and forth from one frequency to another.

4. Liaison:

- a. Lack of coordination with friendly forces.
- b. Language difficulties.
- c. Liaison Officer (LO) did not forward friendly locations to the FDC.
- d. Oversight in computation of target list.
- e. Judgment error of supported unit CO and LO.
- f. Direction of movement and precise location of supported unit was not accurately reported to the artillery FDC.
- g. Personnel were not warned and did not take cover during a close fire support mission.
- h. Improper clearance of a preplanned fire by a District Operations Center.

5. Mortars:

- a. Mortar section clearance to fire error.
- b. Faulty ammunition.
- c. 1000 Mil FDC plotting error.
- d. Failure to adhere to established check systems.
- e. Liaison clearance to fire error.
- f. 200 Mil error in placement of aiming stakes.
- g. 100 Mil deflection error on mortar.
- h. Use of restricted ammunition over the heads of friendly troops.
- i. 100 Mil elevation error on mortar.

- j. Lack of adequate training and experience.
- k. Failure to follow established clearance procedures.
- l. Failure to comply with published directives.
- m. Tactical Operations Center (TOC) situation map not up-to-date with "No fire zones."
- n. Lack of clearly defined employment and control procedures for displaced mortar sections.

6. Other:

- a. Smoke canister ricochet.
- b. Firing too close to inadequately protected troops at the request of the supported unit CO.
- c. Incorrect azimuth transmitted by a relay station.
- d. Communications difficulty.
- e. Survey control not available.
- f. Infantry battalion did not have an SOP in effect for close-in artillery fires.
- g. Lack of coordination.
 - (1) Patrols moving through friendly ambush sites without knowledge of their locations.
 - (2) Units advancing prematurely into artillery preparation fires.
 - (3) Artillery placing H and I fires on friendly units not knowing they were there.
- h. Unit disorientation.
 - (1) Patrols wandering into free fire areas.
 - (2) Unit leaders and forward observers failing to determine their proper location, and calling for fire on coordinates in which friendly forces were located and, in some cases, in which they themselves were located.

i. Artillery firing outside area of responsibility.

j. Civilians returning to hostile zones which had been cleared for H and I fires, violating curfew laws, or inadvertently becoming involved in fire fights.

AIR

1. Pilots not knowing the exact location of friendly ground troops.
2. Smoke and haze obscuring targets that were in close proximity to friendly forces.
3. Language difficulties.
4. FAC's charts not up-to-date.
5. Pilot and FAC disorientation.
6. Dispersion of air delivered ordnance.
7. Too many changes concerning target position and attack headings being given to pilots prior to the strafe pass.
8. Pilots failing to confirm the target with the FAC prior to engagement.
9. Failure of FACs to properly identify and mark targets.
10. Failure of FACs to properly calculate ground distances and relay this information to the strike pilots.
11. Malfunction of a bomb rack mechanism.
12. Accidental delivery of ordnance.
13. Air delivered ordnance being dropped too close to friendly troops.
14. Accidentally thumbing the bomb release button on the stick grip while attempting to trim the aircraft with the stick trimmer button.
15. Pilot failing to maintain a precise attack heading and overflying friendly forces.

16. Friendly forces being unable to mark their positions with smoke due to the tactical situation.
17. Low experience level of pilots.
18. Changing of a CBU dump area by the FAC without obtaining clearance and without checking with all available sources for the location of friendly forces.
19. Brigade TACPs failing to keep FACs informed of all friendly positions in the target area of operations.
20. Improper selection of ordnance for close-in tactical support missions.

EXTRACT

SEVENTH AIR FORCE CONVENTIONAL AIRMUNITIONS GUIDE

WEAPONS MINIMUM SAFE DISTANCES

<u>Weapons Type</u>	<u>Min Distance (Meters)</u>
1000 lb bombs and larger bombs.....	240
750 lb bombs, low drag.....	193
750 lb bombs, high drag.....	148
500 lb bombs, low drag.....	218
500 lb bombs, high drag.....	142
All smaller bombs.....	142
Napalm (all types), parallel to friendly troops.....	75
Napalm (all types), over friendlies toward enemy.....	112
CBU (all except CBU-24).....	105
CBU-24.....	1000
Rockets (all pods).....	217
Cannons and guns (20mm, 50 cal, 7.62mm).....	25

Distances indicated are minimum safe distances for protected troops, i.e., in armored vehicles, bunkers, trenches or foxholes. Troops must be shielded from point of weapon detonation. Distances offer reasonable casualty-free risk for protected troops. Delivery of weapons closer than minimum distances indicated above will introduce the risk of friendly casualties. Minimum distances include 150 percent expected delivery accuracy. 200 percent weapon lethal radius (LR), 60 meters target identification error for high angle delivery, and 30 meters error for low angle delivery.

Napalm flame pattern is approximately 35 x 100 meters. Best delivery is parallel to friendly troop positions. U-shaped friendly formations must have at least 1000 meters width for parallel delivery. U-shaped friendly formations smaller than 1000 meters in width are restricted to delivery over friendlies toward the enemy position.

Normal CBU patterns (except CBU-24) are about 30 x 400 meters. Delivery of CBUs parallel to friendly formations with positions well marked. Caution must be exercised in the vicinity of friendly troops near the ends of the CBU pattern, since delayed releases may extend patterns beyond desired areas. Aircraft should never fly over friendly positions once they have initiated CBU passes because some bomblets may dribble from dispensers.

CBU-24 pattern size is approximately 300 x 365 meters; therefore, this weapon is not for use near friendly forces.

SOURCE MATERIAL

1. COMUSMACV VMAC 41-67, DTG: 021210Z Aug 67
2. COMUSMACV VMAC 59-67, DTG: 030610Z Nov 67
3. COMUSMACV Message 36135, DTG: 030608Z Nov 67
4. COMUSMACV VMAC 15-68, DTG: 221235Z Jan 68
5. COMUSMACV VMAC 56-68, DTG: 160045Z Apr 68
6. COMUSMACV VMAC 73-68, DTG: 160740Z Jul 68
7. MACDMA "Print-Outs" of COC Daily Journal Entries.
8. 7th Air Force files of "Short Round" Incidents.
9. 7th Air Force Conventional Airmunitions Guide, 27 May 68.
10. USARV Investigation Reports of Incidents due to Friendly Fires.
11. MACV Investigation Reports of Incidents due to Friendly Fires.
12. Headquarters, I Field Force Force, Vietnam, Artillery Analysis of Friendly Fires Accidents, 8 May 68.
13. Headquarters, II Field Force, Vietnam, Artillery, Artillery/Mortar Accident and Incident Fact Sheets
14. DA Operations Report - Lessons Learned 1-68: Summary of Lessons Learned, 1 Feb 68.

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5	11 Apr 62	Multi-Battalion Operation in Northern Tay Ninh Province
6	11 Apr 62	Operations in Phuoc Thanh Sector to Relocate Civilians
7	18 Apr 62	Operation DAN TIEN VIII
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